Grade 8 Linear Data Deductions

EQ: How can data be used to model real-world situations? How can these models be analyzed to make predications about real-world events?

**Day 1 – 2**

A/BR: Have students log into the computers as they discuss in pairs the graph projected on the board that shows the Spelling Test study times and scores. Discuss as a group the correlation between the two items, draw a line of best fit, and determine the outlier. Show a graph of shoe size and eye color to discuss no correlation and at a graph of amount of food eaten with the amount of food on the plate for a negative correlation. Talk about other items that would have a positive, negative, or no correlation. Pass out the worksheet for them to follow and complete throughout the class. Answer question 1.

T: Ask students to open the Tech Steps “Linear Data Deduction” workbook and from the Table of Contents select “Make a Scatter Plot.” Have the students open the “Data Deductions” Excel worksheet. Have students create a Scatter Plot using the Data in Columns C and D. Complete question 2 on the worksheet. In Algebra I, discuss the form of the equation, the slope, and its meaning.

After discussing the line of best fit, explain correlation coefficients and their significance. Discuss how to make an equation in Excel and find the correlation coefficient of the data in the graph. Complete #3-6 individually or in pairs.

Show an example of using column B and E to make another comparison. Have students to pick any two columns on the graph to complete #7-9.

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EQ: How can data be used to model real-world situations? How can these models be analyzed to make predications about real-world events?

**Day 3**

BR: Place students into pairs as they sit down at the computers. As students are logging into the computers, pass out the pages to complete in class today. Ask students to complete number 1 as a review. After students are done, show graphs and discuss correlations and correlation coefficients.

T: \*Have students go to <http://cabellcountyteachers.wikispaces.com/Tech+Steps+Lessons> (shortened to tinyurl.com/mmsmath for this assignment). Click on “Linear Data Deductions Day 3.xlsx” to open the data to be used in class today. Explain to students that each group needs to pick a different set of data and have it approved. Once topics have been chosen, have students create an Excel spreadsheet with the information, graph the chart, and find the correlation coefficient. Students should then complete questions 3-5. On #5 students should be encouraged to think outside of the box to explain ways that their data and findings could be used in real world situations. If time, have students present their findings to the class and discuss the uses of the information.

\*On SMART Board write the URL. Once students have opened the Excel file, put up the following list:

1. Choose a topic and have it approved

2. Create a graph of your data set (Answer question 2)

3. Label the graph and add a trendline (Question 3)

4. Use the formula to find the correlation coefficient of the information (Question 4)

=correl(\_\_\_:\_\_\_\_,\_\_\_\_:\_\_\_\_)

5. Write a paragraph analyzing the graph, correlation coefficient (decimal and percentage), and the overall meaning of the information. (Question 5)

Linear Data Deductions Day 1

1. Draw a sketch to show what a graph looks like if it is showing a:
2. Positive correlation b. Negative correlation c. No correlation
3. There is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation in the graph with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

on the x-axis and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the y-axis.

1. If a correlation coefficient is close to \_\_\_\_ it means that there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

relationship. If it is close to \_\_\_\_\_ it means that there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

relationship. If it is close to \_\_\_\_\_ it means that there is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

relationship. The correlation coefficient of the data from #2 is \_\_\_\_\_\_\_\_, so this means that

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. If a scientist found an animal with a brain weighing 500g, what do you think its approximate lifespan would be?
2. The human brain is approximately 1320g. What lifespan does the data suggest humans may have? Does this sound reasonable?
3. Can you be sure that larger animals, on average live longer? What would you need to do to be more confident in this conclusion?
4. There is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation in the graph with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

on the x-axis and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the y-axis.

1. The correlation coefficient of the data from #7 is \_\_\_\_\_\_\_\_, so this means that \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Draw a rough sketch of the scatter plot and line of best fit for #7.

Linear Data Deductions Day 2

1. Draw a sketch to show what a graph looks like if it is showing a:
2. Positive correlation b. Negative correlation c. No correlation
3. Topic: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The graph on our Excel spreadsheet shows that there is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ correlation in the

graph with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ on the x-axis and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

on the y-axis.

1. The correlation coefficient of the data from #3 is \_\_\_\_\_\_\_\_, so this means that \_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Other information that we have found is: